CM-10GRT-SFP Managed Media Converter Modules

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10/100/1000/2.5G/10GBase-T to SFP Copper or Fiber Converter

- Copper to fiber and copper to copper conversion
- Uses a variety of underlined transceivers supplied by Perle, Cisco or other MSA compliant SFP+
- Advanced features: Cut-Through Forwarding, Smart Link Pass-Through, Fiber Fault Alert, Built-in Link Test Generator and Loopback
- Manage via SNMP, CLI - Telnet/SSH, Internet browser, or PerleVIEW Centralized Management Package with an MCR-MGT Media Converter Management Module
- Support for Power Level 1 and 2

Installed in a high density MCR1900 Media Converter Chassis, the Perle **CM-10GRT-SFP Media Converter Module** transparently connects 10/100/1000/2.5G/10GBase-T Ethernet links over multimode or single mode fiber. The CM-10GRT additionally supports 10/100/1000/2500/10000 rate conversion. Each Media Converter comes with one RJ45 Ethernet port and an empty slot for one SFP or SFP+ module. These media converters can be used in an unmanaged environment or can be SNMP manageable to enable complete control and status viewing of your fiber links. 10GBASE-T Media Converter Modules are also available for unmanaged networks, or for low to mid-density application check out the stand alone SMI-10GT Managed Media Converter.

The CM-10GRT-SFP Managed Media Converter Modules supports key features for ultimate network flexibility and growth.

- 10/100/1000/2.5G/10G rate conversion can be enabled to automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different. This is ideal in scenarios where disparate networks need to be connected.
- Cut-Through Forwarding can be configured for environments where throughput speed is critical. This will increase the media converter's throughput and reduce latency by performing packet forwarding in the most efficient manner possible.

Copper to Fiber conversion is achieved by inserting SFP or SFP+ fiber transceivers that support multimode and single-mode fiber, including CWDM/DWDM wavelengths. Copper to copper is achieved by inserting SFP+ Direct Attach Cable (DAC), also known as twinax.

The empty transceiver ports on the **CM-10GRT-SFP Managed Media Converter Modules** allows for flexible network configurations to meet any requirement using a variety of transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFP. You can use this products to convert:

Copper to Fiber Conversion:

- 10/100/1000/2.5G/10GBase-T to 1G Fiber SFP
- 10/100/1000/2.5G/10GBase-T to 10G Fiber SFP+

Copper to Copper Conversion:

10/100/1000/2.5G/10GBase-T to 1G Copper SFP

The Perle CM-10GRT-SFP Managed Media Converter Module provides an economical path to extend Ethernet data transmission distances or convert network speeds. Network Administrators can "see-everything" with Perle's advanced features such as Smart Link Pass-Through, Fiber Fault Alert and Loopback. Along with a Media Converter Management Module in the chassis, configuration and monitoring of the copper and fiber ports can be performed. This allows for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with a **lifetime warranty** and **free worldwide technical support**, make the Perle **CM-10GRT-SFP Managed Media Converter Modules** the smart choice for IT professionals.

For those environments requiring a medium to large-scale deployment of media converters, a centralized platform that simplifies the configuration, administration, monitoring, and troubleshooting of Perle Managed Media Converters is recommended. PerleVIEW Device Management software is a multi-user, Windows server-based application that delivers this level of Enterprise-grade solution.

CM-10GRT-SFP Managed Media Converter Modules Features

Rate Conversion	The Media Converter can automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different.
Cut-Through Forwarding	When the same Ethernet speed for both ports is enabled, the CM-10GRT-SFP Managed Media Converter Modules can be configured for Cut-Through Forwarding. This will increase the media converter's throughput and reduce latency by performing packet forwarding in the most efficient manner possible. Forwarding of a packet will begin as soon as the destination address is processed.
SFP Speed Sensing	Automatically detects whether a SFP has been inserted and adjusts the speed accordingly.
SGMII Interface Support	The Media Converter supports 1000Mbps SGMII SFPs
Copper Auto-Negotiations	The media converter supports auto negotiation on Ethernet copper interface port
Copper Duplex	Full and half duplex operation is supported
Smart Link Pass-Through	When Smart Link Pass-Through is enabled (default), each port will reflect the state of its port peer. In this mode, if a link loss is detected on one port, the transmit signal on the other port is disabled "passing through" the state of the failed link. This enables managed switches and other devices to report link failures to their network NMS. When Smart Link Pass-Through is disabled, if a link loss is detected on one port the transmit signal remains enabled on the other port.

Fiber Fault Alert	With Fiber Fault Alert the state of the 10 Gigabit Ethernet receiver is passed to the transmitter. This provides fault notification to the partner device attached to the 10G Ethernet interface of the media converter.
Green Ethernet	Utilizes Green Ethernet energy saving technology based on industry standards such as: Energy Efficient Ethernet (EEE) as per 802.3az. This provides power savings during idle network activity.
Module Temperature Protection	Protects your DOM/DMI capable SFP or SFP+ module by monitoring its internal temperature and will automatically shut down the SFP or SFP+ if the module is operating above its maximum temperature threshold.
Gigabit SFP support	The 10 Gigabit media converter model with the SFP+ slot can also support Gigabit (1000Base-X) SFPs. This allows users to use Gigabit SFPs today and migrate to 10G SFP+ in the future.
Jumbo Packets	Transparent to Jumbo Frames with a maximum MTU size of 10,024 bytes
VLAN	Transparent to VLAN tagged packets.
Remote Loopback	Capable of performing a loopback on the 10 Gigabit interface. In this mode, all frames received on the port in loopback mode will be transmitted back. This provides users with the capability of utilizing their own in-house test generators for testing the link.

Additional features available when installed along with a Media Converter Management Module in a Perle MCR1900 Media Converter Chassis

Configuration Mode selection	Select whether the module is to use the on-board DIP switches or enable the management module in the chassis to manage.
Module Information	• Chassis Slot number that the module is in • Media converter model and serial • User configurable module name • User configurable fiber port name • Hardware revision number • Firmware version number
Module DIP switch settings	View hardware DIP switch settings.
Port Control	Enable or disable individual fiber ports on the module.
Fiber Port Status	• Port Enabled (Yes/No) • Connector • Link Status (Up/Down) • Fiber Fault Alert (OK, Failed) • Fiber Loopback mode (On/Off)

Module Control	• Reset card • Reset to factory default • Ability to specific read/write phy registers • Update firmware • Fiber Loopback mode (Yes/No) • Upload/download configuration
Backup and Restore	Provides fast and easy module replacement. Management module will always save a copy of the media converter configuration and will restore this configuration automatically to the media module when it is detected in the slot.
Manage Tune-able DWDM XFP modules	Select transceiver ITU 50GHz center wavelengths and channel numbering on tune-able XFP transceivers.

Hardware Specifications

Power

Maximum Power Consumption	14 watts*

Indicators

Power / TST	• On: Power indication and in normal operation • Blinking slowly: the unit is in loopback or test mode (either port) • Red solid: the unit has a hardware error (upon power up) • Red and blinking: the unit has a hardware error specified by combination of LK1 and LK2
LK1 (SFP)	• On: Link present • Blinking quickly: Fiber link present and receiving data.(including test data) • Blinking slowly: Fiber link disabled because the other fiber link went down. • Blinking 1 sec on 3 sec off – module shut down due to high temperature. • Off: No fiber link present or no module inserted
LK2	• On: 10GBase-T link present • Blinking quickly: Link present and receiving data • Blinking slowly: Link disabled because Link 1 went down • Off: 10GBase-T link is not active

Switches

Smart Link Pass-Through	*Enabled (Default - Up)* When the Link Mode switch is enabled (default), each port will reflect the state of its port peer using Smart Link Pass-Through. In this mode, if a link loss is detected on one port, the transmit signal on the other port is disabled "passing through" the state of the failed link. This enables managed switches and other devices to report link failures to their network NMS. When the switch is in the down position, Smart Link Pass-Through is disabled. If a link loss is detected on one port, the transmit signal remains enabled on the other port.
Fiber Fault Alert	*Enabled (Default - Up)* With Fiber Fault Alert the state of the 10 Gigabit ethernet receiver is passed to the transmitter. This provides fault notification to the partner device attached to the 10G ethernet interface of the media converter.
Cut-through / Rate converting	*Rate Converting (Default - Up)* The Media Converter can automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different. When the same Ethernet speed for both ports is enabled, the Media Converter can be configured for Cut-Through Forwarding. This will increase the media converter's throughput and reduce latency by performing packet forwarding in the most efficient manner possible. Forwarding of a packet will begin as soon as the destination address is processed
Fiber Interface Loopback	*Disable (Default - Up)* In this mode, all frames received on the fiber port in loopback mode will be transmitted back. This provides users with the capability of utilizing their own in-house test generators for testing the link.
Copper Negotiation	*Auto (Default - Up)* In this mode, the media converter will auto negotiate copper link parameters. When switch is down, the media converter will be in manual mode and will use the parameters as define by Copper Duplex and Copper Speed switches
Copper Duplex	*Full Duplex (Default - Up)* In this mode, the copper port will be set to full duplex mode. If switch is down, the copper port is set to half duplex mode
Copper Speed	*100Mbps (Default - Up)* In this mode, the copper port will be fixed at 100 Mbps. When switch down, the copper port will be fixed at 10 Mbps. Note: Copper Negotiation switch must be set to manual for Copper Speed switch to work.

Connectors

1 x RJ45	10/100/1G/2.5G/10GBase-T IEEE 802.3an 100 meters on CAT6A or better
1 x SFP / SFP+ Transceiver slot Power level 1 (1 watt) and level 2 (1.5 watts) as per SFP-8431 Hot insertion and removable	Supported 10 Gigabit Fiber pluggable transceivers (IEEE 802.3ae compliant): • 10GBase-SR • 10GBase-LRM • 10GBase-LR • 10GBase-ER • 10GBase-ZR • CWDM/DWDM Supported 1 Gigabit Copper SFPs • 1000Base-T • 1000Base-T SGMII Supported Gigabit Fiber SFPs • 1000Base-SX • 1000Base-LX/LH • 1000Base-EX • 1000Base-ZX • 1000Base-BX • CWDM/DWDM
Supported 10 Gigabit Fiber pluggable transceivers	IEEE 802.3ae compliant: • 10GBase-SR • 10GBase-LRM • 10GBase-LR • 10GBase-ER • 10GBase-ZR CWDM/DWDM
Chassis Slot profile	Two slot

Environmental Specifications

Operating Temperature	0° C to 50° C (32° F to 122° F)
Storage Temperature	minimum range of -25° C to 70° C (-13° F to 158° F)
Operating Humidity	5% to 90% non-condensing
Storage Humidity	5% to 95% non-condensing

Operating Altitude	Up to 3,048 meters (10,000 feet)
Heat Output (BTU/HR)	48
MTBF (Hours)	143,838 Calculation model based on MIL-HDBK-217-FN2 @ 30 °C

Packaging

Shipping Weight	0.25 kg, 0.55 lbs
Shipping Dimensions	170 x 260 x 70 mm, 6.7 x 10.2 x 2.8 inches

Regulatory Approvals

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Emissions	FCC Part 15 Class A, EN55022 Class A
	CISPR 22 Class A CISPR 32:2015/EN 55032:2015 (Class A) CISPR 24:2010/EN 55024:2010
	EN61000-3-2
Immunity	EN55024
Electrical Safety	UL/EN/IEC 62368-1 (previously 60950-1) CAN/CSA C22.2 No. 62368-1
	CE
Environmental	Reach, RoHS and WEEE Compliant
Other	ECCN: 5A991
	HTSUS Number: 8517.62.0020
	Perle Limited Lifetime Warranty

*Maximum rating for both media converter and modules inserted. Actual rating is dependent on the power consumption of the SFP+ modules inserted.

10 Gigabit Copper to Fiber Media Conversion

Convert one 10G Ethernet media to another

Convert your 10GBaseT copper link to multimode or single mode fiber. Ideal for large data centers and Co-Location applications where the distance required to connect top of rack switches exceeds the 100 meter limitation of 10G copper. Up to 18 Perle Media Converter Modules are installed in the MCR1900 Chassis. The 19th slot in the chassis is filled the MCR-MGT Management Module. All media converters in the chassis are managed by SNMP, Telnet or an internet browser interface. This allows the copper or fiber link to provide vital information and status updates to network various management tools.
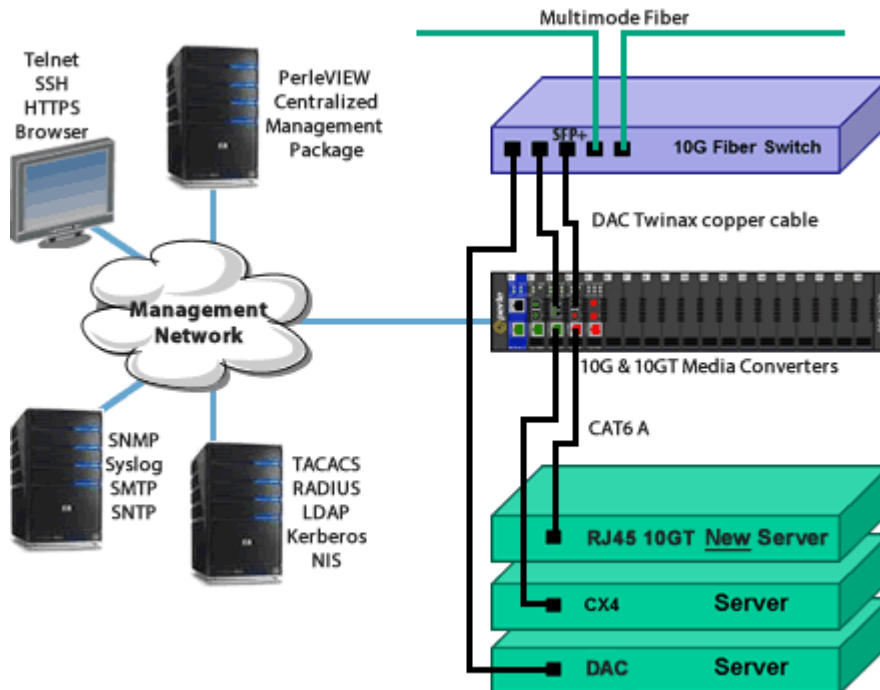
Auto-sensing Rate Conversion (10/100/1000/2.5G/10GBase-T)

Using auto-sensing RJ45 Ethernet port and the empty SFP/SFP+ slot, connect and convert copper Ethernet to 1G or 10G multimode or single mode fiber. Or, convert to 1G copper.

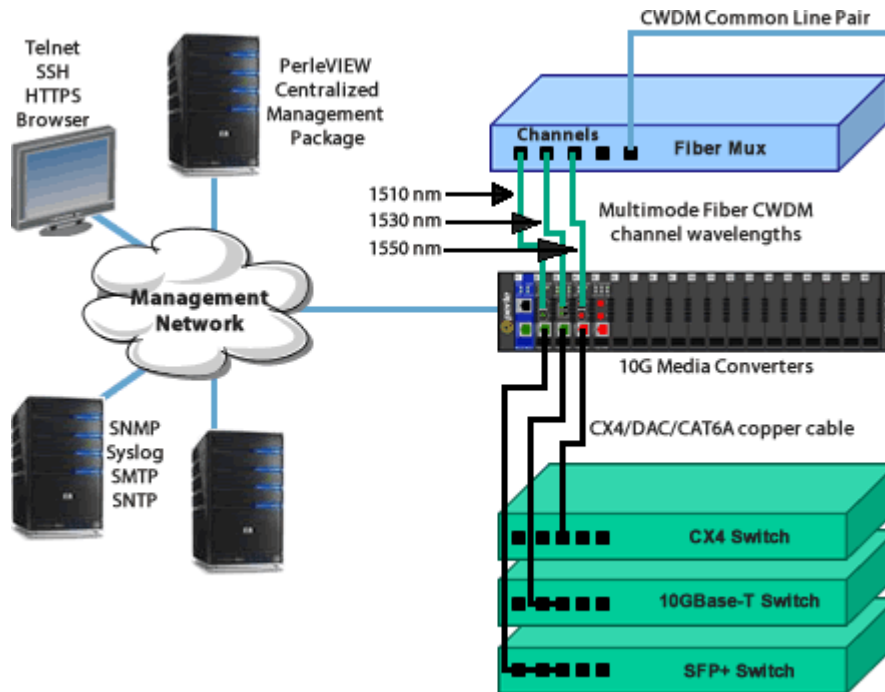## CWDM Data Center

Media Converters to Fiber Mux
10GBase-T to CWDM SFP+ conversion.

CM-10GRT-SFP | 10GBase-T Managed Media Converter | Perle

Part Number: 05062610

CM-10GRT-SFP- Managed 10 Gigabit Media and Rate Converter Module: 10GBASE-T (RJ-45) [100 m/328 ft.] (CAT6A or better) to fiber 10GBase-X or copper 10GBase-CX1 SFP+. SFP+ slot (empty). Managed or unmanaged operation.